

ML610Q482 Reference Board User's Manual

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Preface

This manualdescribes the ML610Q482 Reference Board.

The following manuals are also available. Read them as necessary.

- **ML610Q482 User's Manual**
Description on the ML610Q482
- **uEASE User's Manual**
Description on the on-chip debug tool uEASE.

1. Overview

1.1 Features

ML610Q482ReferenceBoard is a board for evaluating the function of ML610Q482.

This board can connect the pin of ML610Q482 with a user application system, it can perform the check of a system of operation easily.

By using the board with "on-chip debug emulator" (hereinafter referred to "uEASE") not only Software debugging but also writing Flash ROM in the devices are capable.

The hardware specification of this board is shown below.

Embedded microcontroller	<ul style="list-style-type: none"> ▪ U1: ML610Q482 (The part name is labeled on the solder side of the board.)
Embedded parts	<ul style="list-style-type: none"> ▪ XT, C2, C3: 32.768KHz resonator and capacitors ▪ PWR: Jumper for input power supply switch (3pin pin-header and short pin) ▪ CNUE: Connector for uEASE (14pin connector) ▪ C1, C6-C9: Capacitors for power supply and LCD bias generation circuit
Pads for mounting	<ul style="list-style-type: none"> ▪ CNU1 to CNU4: Pads for peripheral board connectors (34pin x 4, 2.54mm pitch) ▪ IN0, CS0, RCT0, RS0, RT0, CVR0, RT1, RS1, CS1, IN1, CVR1: Pads for RC oscillation type ADC parts ▪ SP1 to SP13: Pads for opening or short (1608 type) ▪ X2, C4, C5: Pads for mounting high-speed clock oscillation circuit parts
Power supply pads	<ul style="list-style-type: none"> ▪ DVDD, GND
Monitor pads	<ul style="list-style-type: none"> ▪ RCM: RC oscillation monitor
Operating voltage	<ul style="list-style-type: none"> ▪ +1.1V to +3.6V
Board size	<ul style="list-style-type: none"> ▪ 71.12 x 60.96 mm

This board is made on the assumption that it is used mounting in the user application board.

There is a possibility of short the circuit when using it on electroconductive so that the board may have the pattern on the solder side.

Therefore, please use the board on nonconductivity or put the protection parts on the solder side if necessary.

1.2 PCB outline drawing

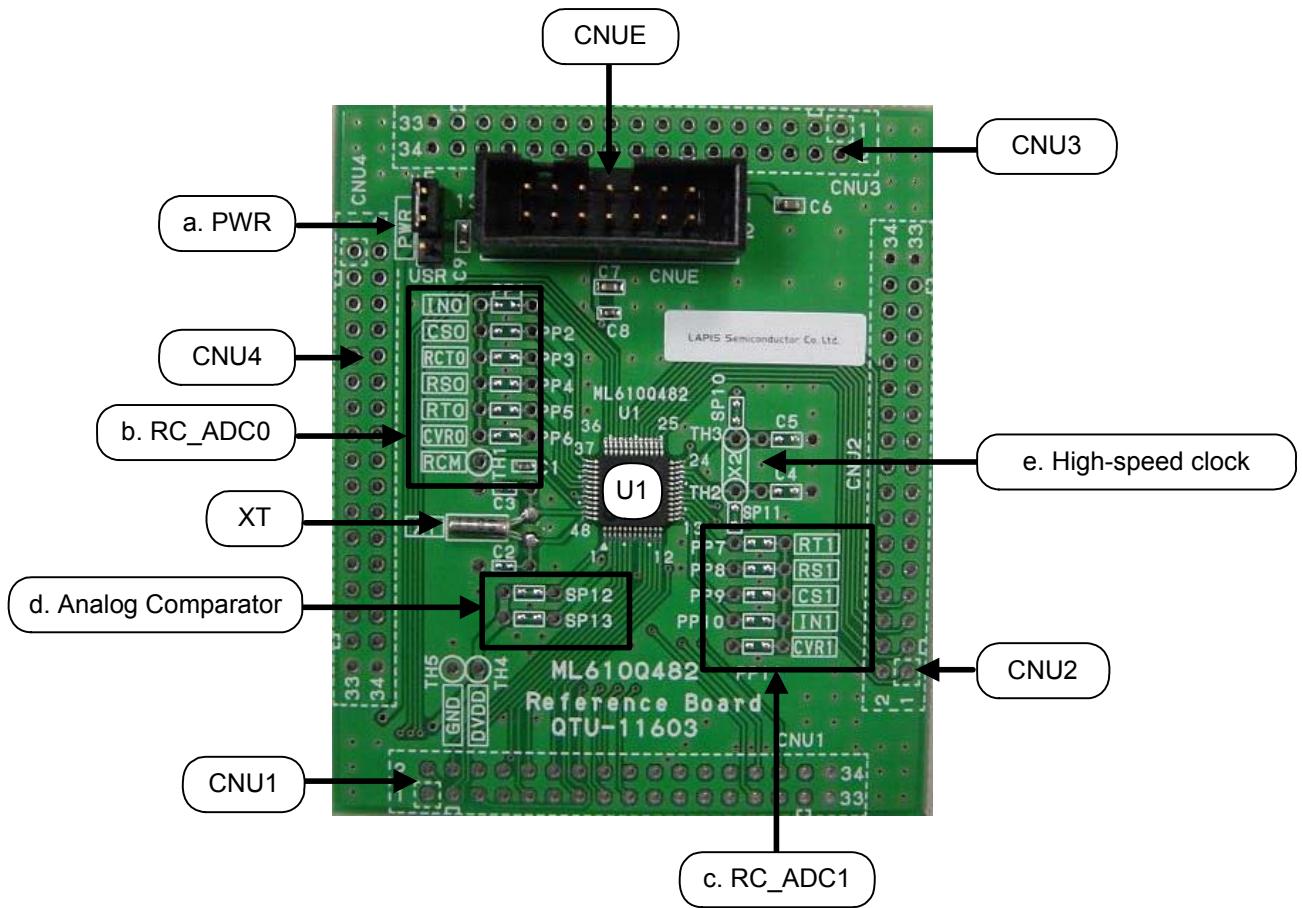


Fig.1 PCB outline drawing

2. Function

2. 1 PWR Jumper (a. PWR)

This is a jumper which input power supply.

When supplying from uEASE, PWR jumper is set to the uE side.

The ability to supply power of the uEASE is +3.3V/100mA.

When supplying from CNU4_1pin and CNU4_2pin, PWR jumper is set to the USR side.

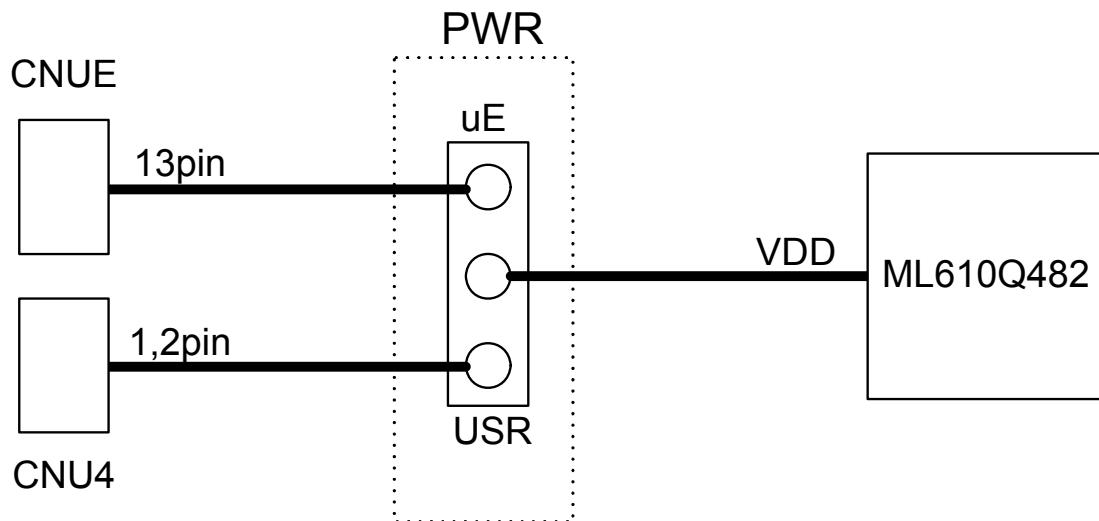


Fig.2 The connection of PWR jumper

【Note】

Notes when the PWR jumper is set to USR side and the uEASE is connected.

Turn on the power supply of the peripheral board after starting the uEASE.

Moreover, Stop the uEASE after turning off the power supply of the peripheral board.

2. 2 When you use RC_ADC0 (b. RC_ADC0)

- (a) Please cut each short pattern of SP1, SP2, SP3, SP4 and SP5 that is on the back side of this board.
If each short pattern is not cut, the RC-ADC0 converter may not have accurate conversion result under the influence of the noise. Please be sure the cut each short pattern.
- (b) Please mount parts on the each pad of the IN0, CS0, RCT0, RS0, RT0 and CVR0 pads.
Refer to ML610Q482 User's Manual for the parts to mount.

The example of processing is shown below.

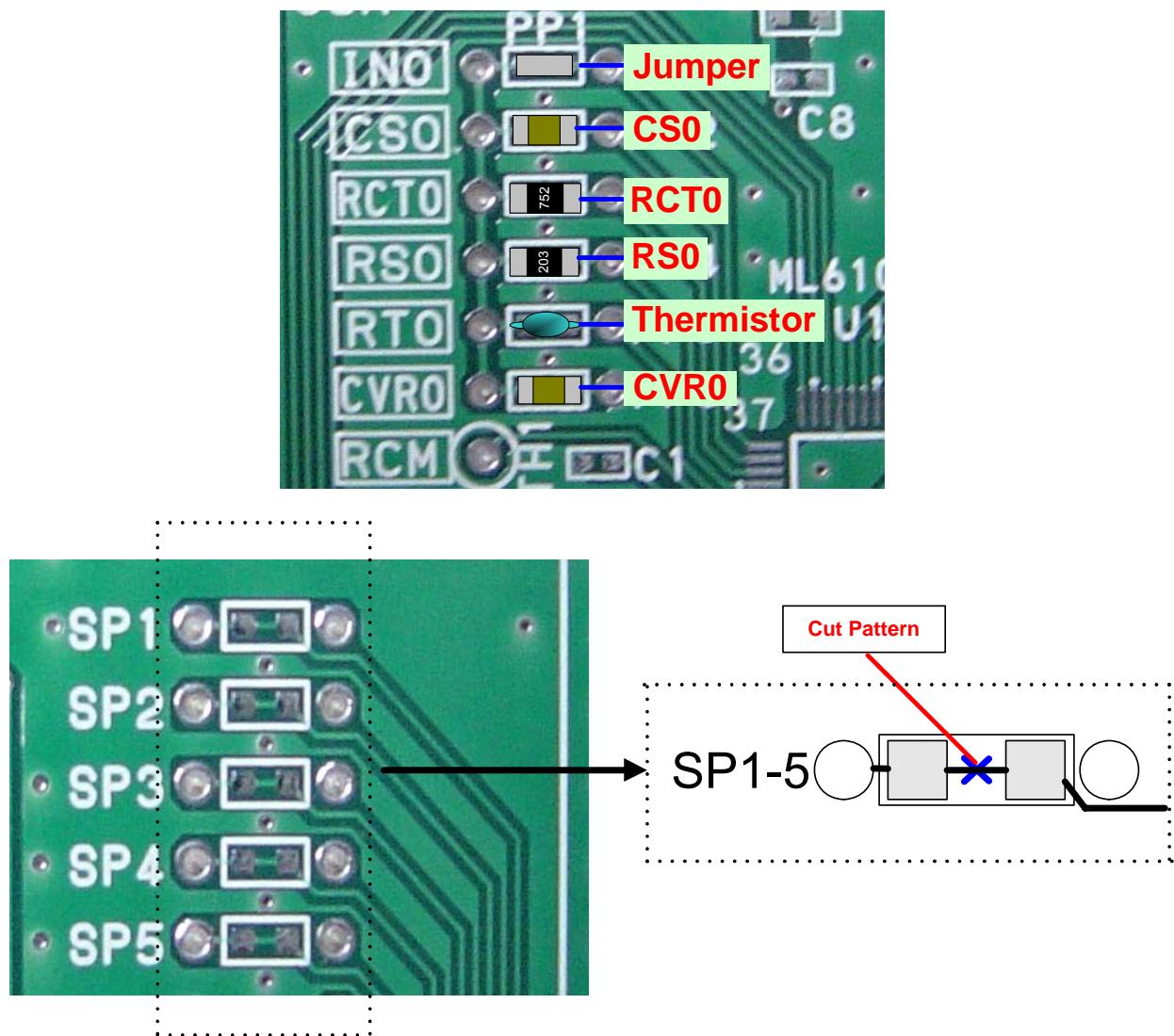


Fig.3 The example of processing of RC_ADC0

2. 3 When you use RC_ADC1 (c. RC_ADC1)

- (a) Please cut each short pattern of SP9, SP8, SP7 and SP6 that is on the back side of this board. If each short pattern is not cut, the RC-ADC1 converter may not have accurate conversion result under the influence of the noise. Please be sure the cut each short pattern.
- (b) Please mount parts on the each pad of the IN1, CS1, RS1, RT1 and CVR1 pads. Refer to ML610Q482 User's Manual for the parts to mount.

The example of processing is shown below.

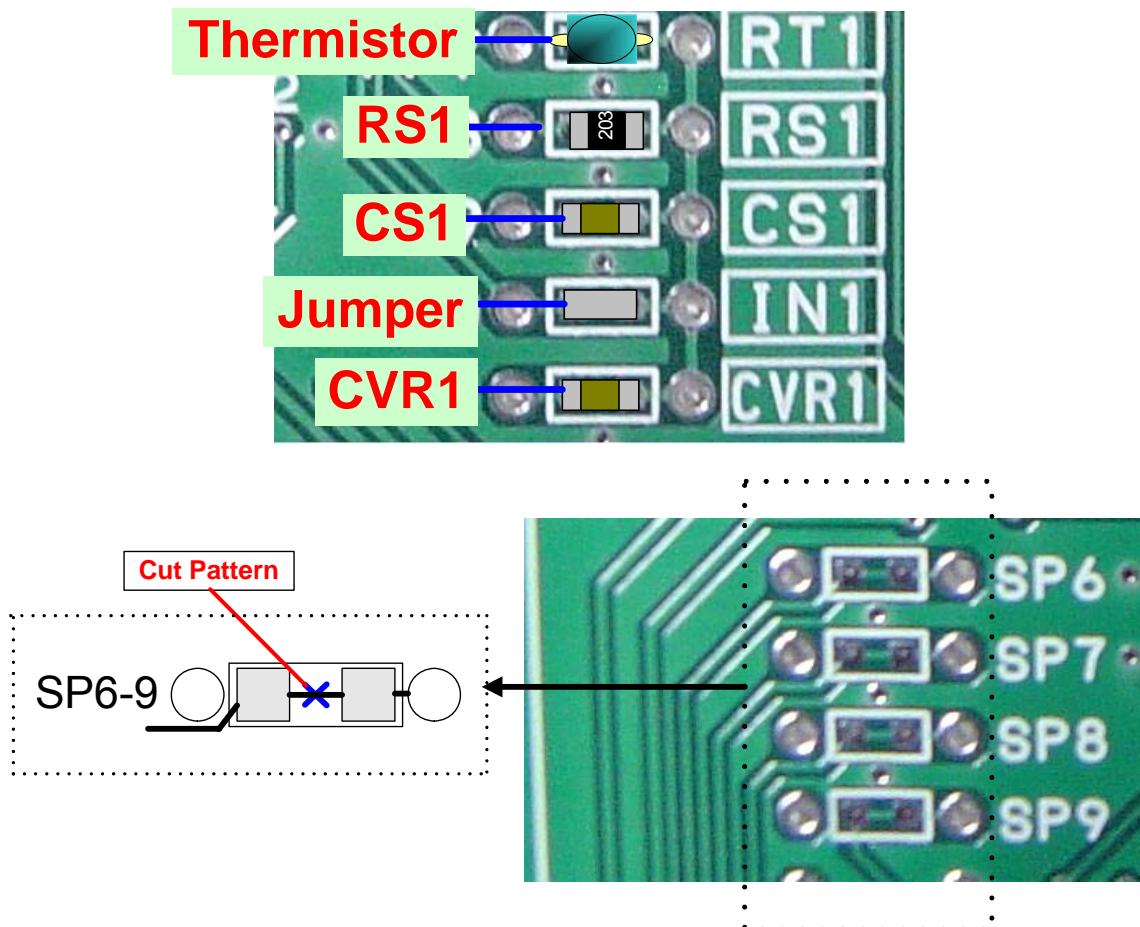


Fig.4 The example of processing of RC_ADC1

2. 4 When you use Analog Comparator (d. Analog Comparator)

CMPP is wired with VDD through SP12. Please cut the short pattern of the SP12 when you use CMPP

CMPM is wired with VDD through SP13. Please cut the short pattern of the SP13 when you use CMPM

If each short pattern is not cut, the power supply might be damaged with the short pattern.

The example of processing is shown below.

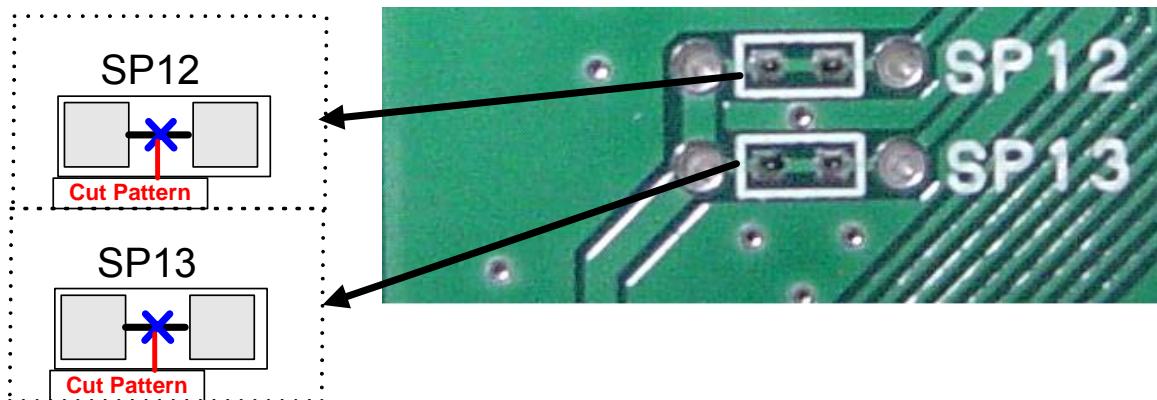


Fig.5 The example of processing of SP12 and SP13

2. 5 When you use the high-speed clock generation circuit (e. High-speed clock)

Please mount parts on the each pad of the X2, C4 and C5 pads.
Please cut each short pattern of SP10 and SP11 if you need.

The example of processing of the high-speed clock generation circuit is shown below.

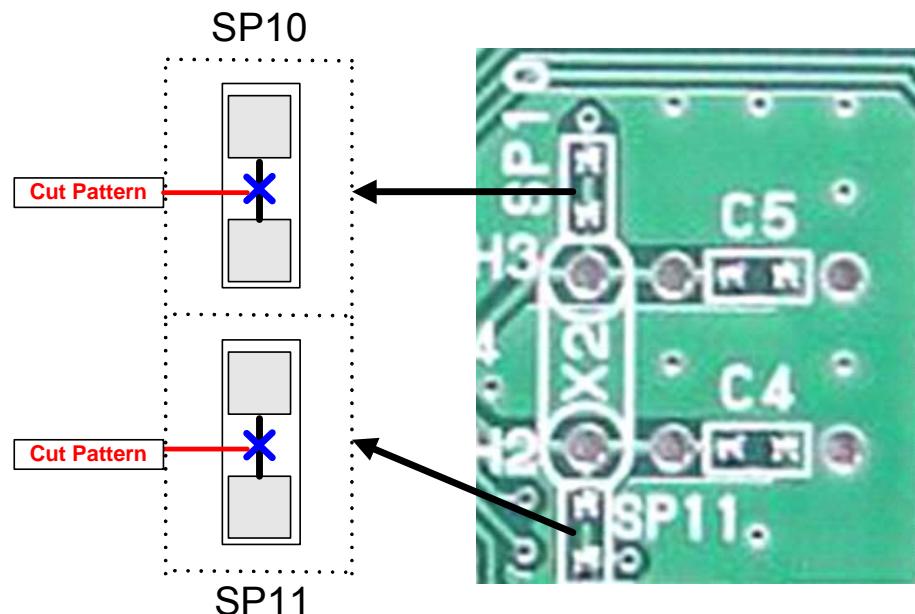


Fig.6 The example of use the high-speed clock generation circuit

3 . User Interface

3. 1 The user interface of ML610Q482ReferenceBoard

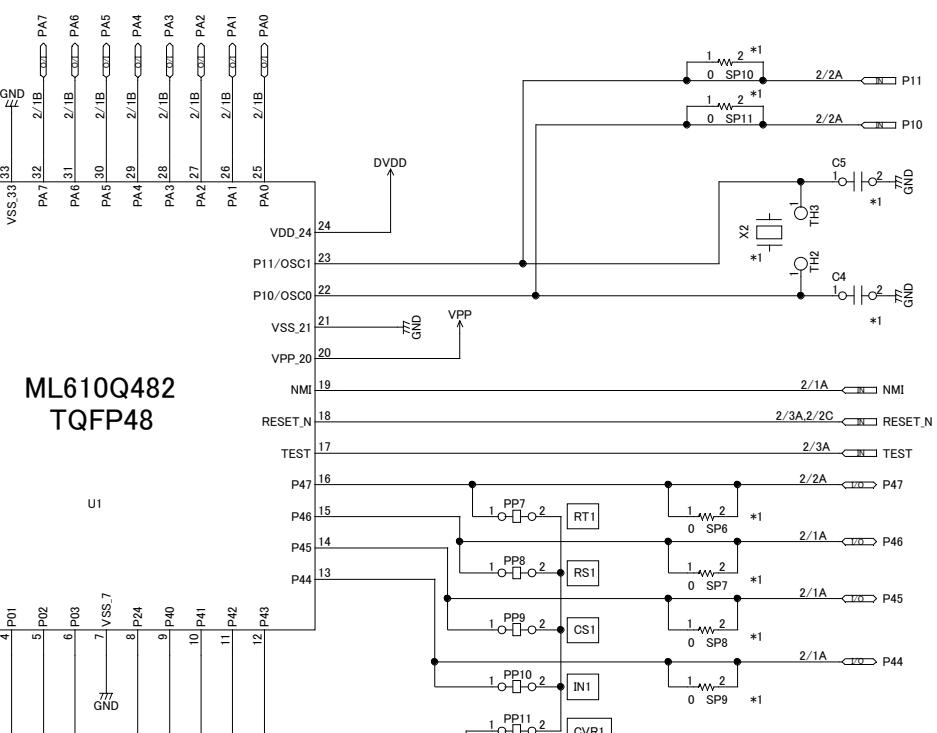
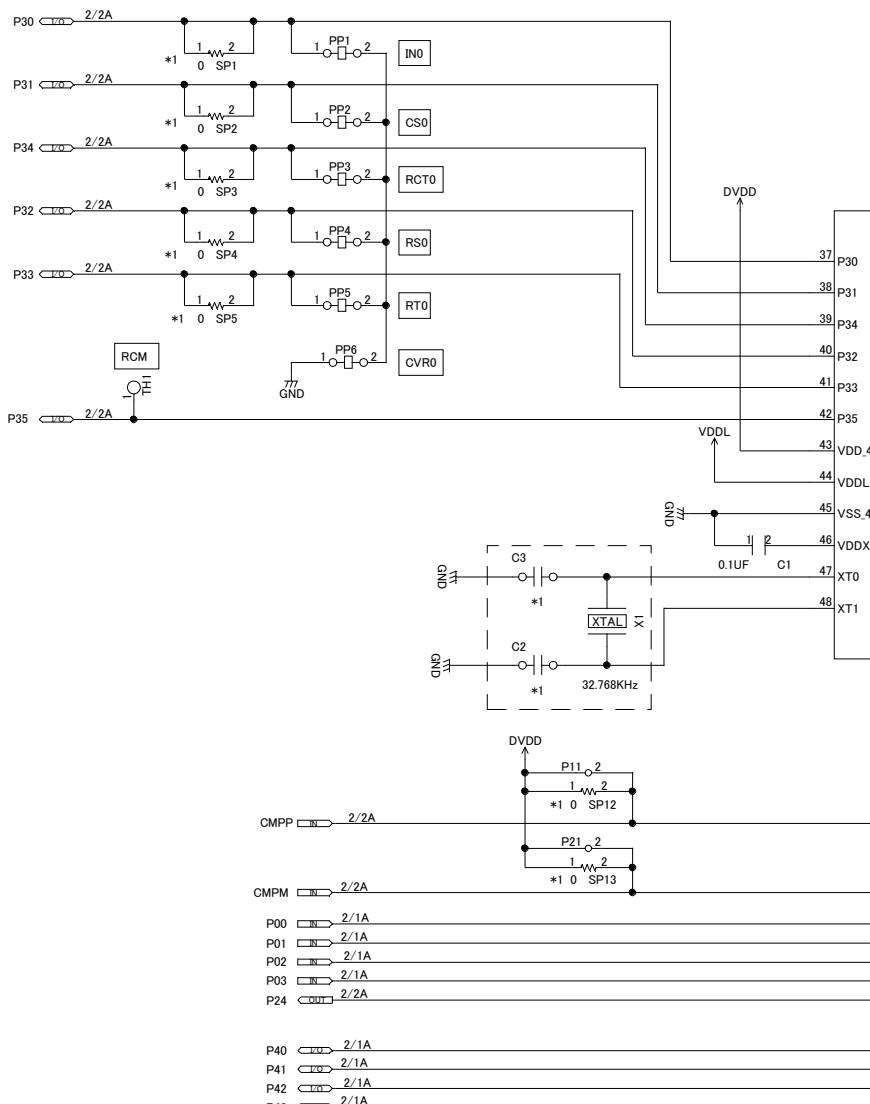
Table1 shows the user interface of reference board which mounted ML610Q482.

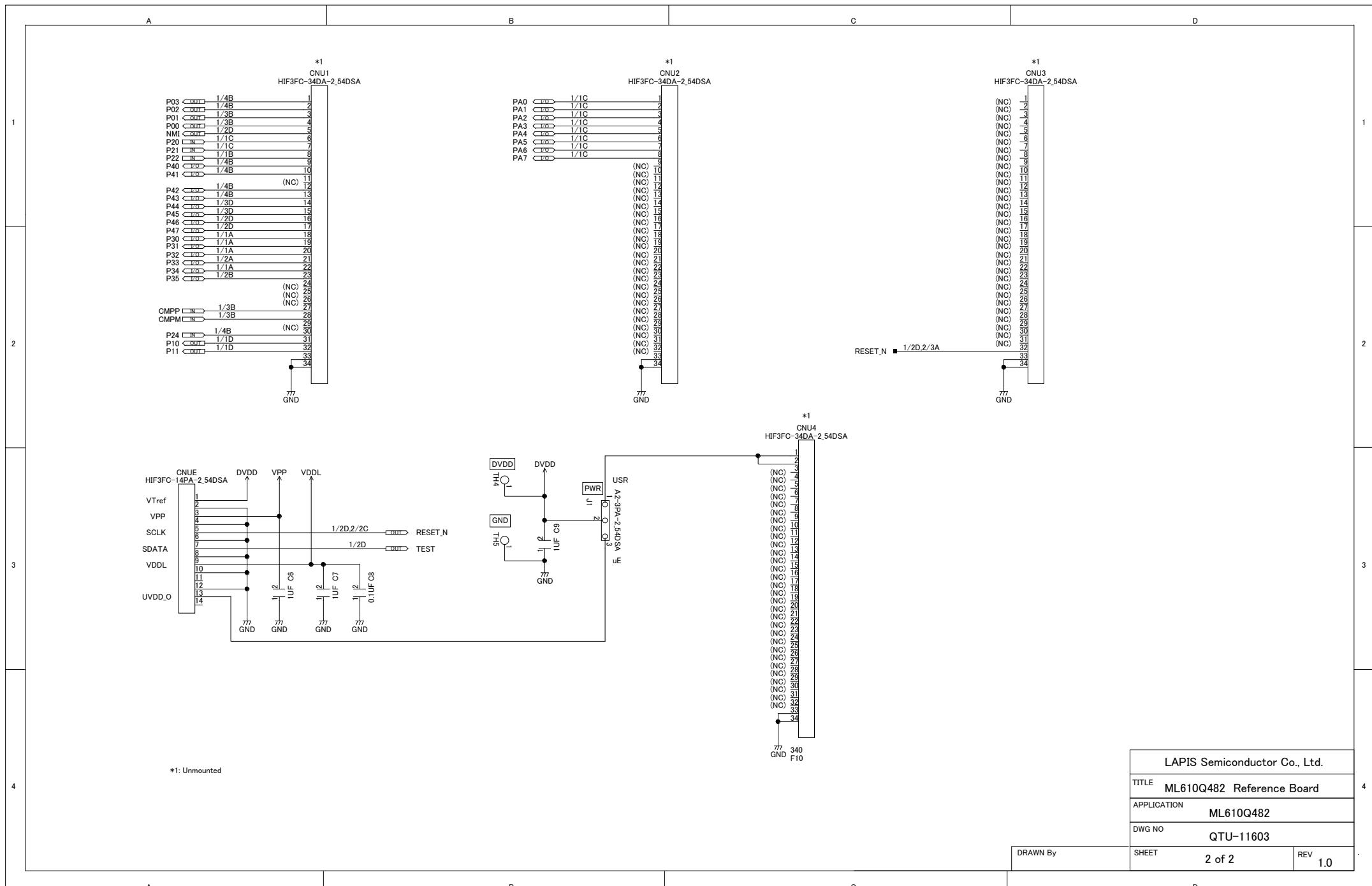
Table 1 CNU1-4 of ML610Q482ReferenceBoard

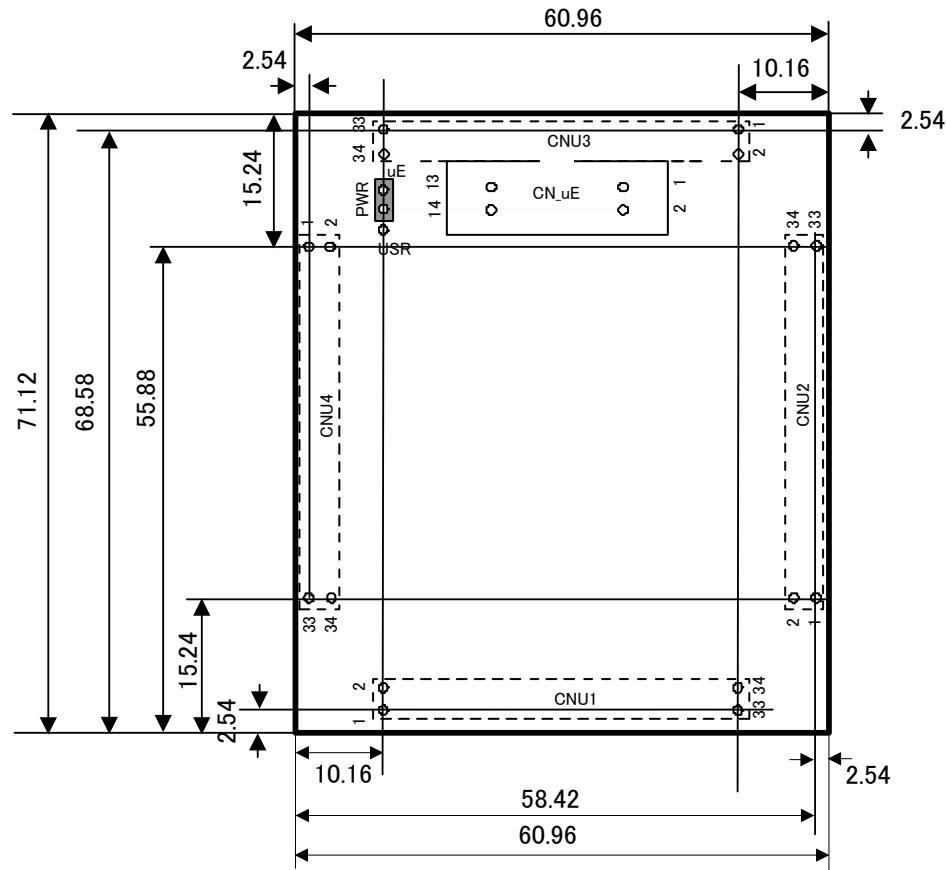
Pin	CNU1	CNU2	CNU3	CNU4
1	P03	PA0	N.C	VDD
2	P02	PA1	N.C	VDD
3	P01	PA2	N.C	N.C
4	P00	PA3	N.C	N.C
5	NMI	PA4	N.C	N.C
6	P20	PA5	N.C	N.C
7	P21	PA6	N.C	N.C
8	P22	PA7	N.C	N.C
9	P40	N.C	N.C	N.C
10	P41	N.C	N.C	N.C
11	N.C	N.C	N.C	N.C
12	P42	N.C	N.C	N.C
13	P43	N.C	N.C	N.C
14	P44	N.C	N.C	N.C
15	P45	N.C	N.C	N.C
16	P46	N.C	N.C	N.C
17	P47	N.C	N.C	N.C
18	P30	N.C	N.C	N.C
19	P31	N.C	N.C	N.C
20	P32	N.C	N.C	N.C
21	P33	N.C	N.C	N.C
22	P34	N.C	N.C	N.C
23	P35	N.C	N.C	N.C
24	N.C	N.C	N.C	N.C
25	N.C	N.C	N.C	N.C
26	N.C	N.C	N.C	N.C
27	CMPP	N.C	N.C	N.C
28	CMPM	N.C	N.C	N.C
29	N.C	N.C	N.C	N.C
30	P24	N.C	N.C	N.C
31	P10	N.C	N.C	N.C
32	P11	N.C	RESET_N	N.C
33	VSS	VSS	VSS	VSS
34	VSS	VSS	VSS	VSS

4 . Schematics and PCB dimensional drawing

The this board schematics and the demensional drawing are shown as follows.







ML610Q4xx Reference Board TOP_VIEW

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**ML610Q4xx Reference Board
Dimensional drawing**